

REMARKS

Claim 20 has been amended, without adding new matter, to address the §112 ¶2 rejection detailed on page 2 of the Office Action. The amendment positively ties the “determining” and “distinguishing” steps together using the “rotational position of the frequency-specific component.” In light of the amendment to claim 20, Applicant requests that the §112 rejection be withdrawn.

Regarding the remaining rejections, claim 15 is directed to a method of manufacturing a high-frequency assembly that includes a plurality of components – at least one of which is frequency specific. Particularly, a placing apparatus of an automatic assembly apparatus places a plurality of components (e.g., electronic components) onto a high-frequency assembly. Prior to the placing apparatus gripping a frequency-specific component for placement on the assembly, the component is identified using a frequency-encoding feature on the component. If the identification indicates that the high-frequency component is the correct component for the assembly, the component is accepted for placement on the assembly. Otherwise, the component is rejected. *E.g.*, *Spec.*, p. 6, ll. 7-23; p. 8, ll. 17-21.

Claim 15 stands rejected as being anticipated by Boegh-Petersen. However, Boegh-Petersen discloses neither “placing a plurality of components on a high-frequency assembly using a placing apparatus of an automatic assembly apparatus,” nor “identifying a frequency-encoding feature on a frequency-specific component prior to gripping the frequency-specific component with the placing apparatus,” as claimed.

Boegh-Petersen discloses a connector assembly that electrically connects a printed circuit board (PCB) to be tested to a testing machine. *Boegh-Petersen*, col. 8, ln. 5 – col. 9, ln. 11. Once connected, the testing machine provides an electrical current to test the traces on the PCB. For PCBs used in High Frequency applications, the testing machine may also be used to

test an insulation material disposed between traces and the electrical contacts on the PCB. If a given PCB fails the tests, that PCB may be discarded or fixed, as appropriate.

Boegh-Petersen does not disclose, “placing a plurality of components on a high-frequency assembly using a placing apparatus of an automatic assembly apparatus,” as recited by amended claim 1. Boegh-Petersen never mentions an automatic assembly apparatus, or a placing apparatus associated with the automatic assembly apparatus, to place the components on a high-frequency assembly. This is because Boegh-Petersen is not concerned with the *manufacture* of high-frequency assemblies, but instead, is fundamentally concerned with the *testing* of a plurality of different types of circuit boards. The only thing Boegh-Petersen discloses with respect to high-frequency assemblies is that they exist, and that the testing machine could be used to test (not manufacture) the circuit traces on PCBs used in high-frequency applications.

Additionally, Boegh-Petersen does not disclose, “identifying a frequency-encoding feature on a frequency-specific component prior to gripping the frequency-specific component with the placing apparatus,” as recited in amended claim 15. In fact, Boegh-Petersen says nothing about a “frequency-encoding feature on a frequency-specific component.” Even the high-frequency PCBs being tested in Boegh-Petersen do not include “a frequency-encoding feature,” as claimed. Boegh-Petersen discloses only that the PCBs have insulation between “certain tracks,” and that such insulation can be tested with the testing machine. Boegh-Petersen never discloses, however, that the testing machine discerns between regular PCBs and high-frequency PCBs based on the insulation or traces.

Boegh-Petersen cannot identify a feature that is not disclosed. Moreover, absent the claimed identification, Boegh-Petersen cannot disclose accepting or rejecting a component for placement on a high-frequency assembly, as claimed. Indeed, Boegh-Petersen does not

anticipate claim 1 or any of its dependent claims because it does not disclose each limitation of claim 1.

Claim 28 is directed to a frequency-specific component for a high-frequency assembly, and stands rejected as being obvious over Boegh-Petersen. However, Boegh-Petersen does not render claim 28 obvious because it does not teach or suggest (or even mention) a “machine-detectable feature ... disposed on the frequency-specific component to indicate a specific operating frequency of the component,” as claimed. As stated above, Boegh-Petersen simply discloses that some PCBs used in high-frequency applications have special traces that the testing machine must consider. However, those traces say nothing about a specific operating frequency of any of the components that may be attached to the PCB, or for the PCB itself. Boegh-Petersen does not teach or suggest every element of claim 28. Therefore, Boegh-Petersen does not render claim 28, or any of its newly added dependent claims, obvious.

Claim 29, which is directed to a manufacturing apparatus for the automatic manufacture of a high-frequency assembly, also stands rejected as being obvious over Boegh-Petersen. Amended claim 29 recites, “a placing apparatus to place one or more components on a high-frequency assembly, wherein at least one of the components comprises a frequency-specific component,” “a sensor to detect a frequency-encoded feature associated with the frequency-specific component that indicates an operating frequency of the frequency-specific component,” and “a controller...configured to...control the placing apparatus to place the frequency-specific component on the assembly, or to reject the frequency-specific component based on the received signal prior to the component being taken up by the placing apparatus.” For reasons similar to those stated above, Boegh-Petersen does not teach or suggest any of these elements. Therefore, Boegh-Petersen does not render claim 29 obvious.

The Examiner equated the claimed frequency-specific component with a circuit board (“Boegh-Peterson discloses using a frequency-specific component (circuit board) for a high

frequency application . . .”). This is impermissible claim construction. The broadest reasonable interpretation of the claims must also be consistent with the interpretation that those skilled in the art would reach. *MPEP* § 2111. Those of skill in the art understand components to be the electrical devices attached to circuit boards, not the circuit boards themselves.

For example, the Wikipedia entry for “electrical component” states, “An electronic component is a basic electronic element usually packaged in a discrete form with two or more connecting leads or metallic pads. Components are intended to be connected together, usually by soldering *to a printed circuit board*, to create an electronic circuit with a particular function.” (emphasis added). A component is thus clearly distinct from the circuit board on which it is mounted.

As another example, the Boegh-Petersen reference – which the Examiner cited as evidence of what was known to those of skill in the art at the time of Applicant’s filing – states, “Furthermore, *the circuit board* to be tested may have *components arranged thereon*, e.g. discrete components, components provided in layer technique, such as printed resistors, printed capacitors, and printed inductors or chip components.” *Boegh-Petersen*, col. 3, lines 6-11. Again, the component is described as being a separate entity from the circuit board.

Finally, interpreting the claimed components as circuit boards would render Applicant’s specification nonsensical. See, for example, p. 6, lines 11-14: “Further, the control circuit 18 is coupled to a camera 19, which is held above the table top and is directed to the assembly location 8 and allows to optically inspect the circuit board 6 and *components to be placed on circuit board 6* before placement on circuit board 6 in a manner which is described in more detail later on.” Obviously, components placed *on* a circuit board cannot themselves *be* circuit boards. During patent examination, the pending claims must be given their broadest reasonable interpretation *consistent with the specification*. *MPEP* § 2111. An interpretation of a claim term

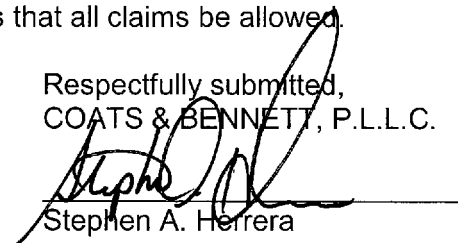
that renders the specification nonsensical is not consistent with the specification. In short, a circuit board is not a component, as that term is used in the claims.

Further, the Examiner took Official Notice that detecting the operating frequency of a circuit board was well-known at the time the invention was made. Circuit boards – as opposed to electrical components – do not have operating frequencies. Circuit boards may be designed to *support* components operating in certain frequency ranges; however, those of skill in the art do not speak of circuit boards having operating frequencies. In any event, such a characterization is not "capable of such instant and unquestionable demonstration as to defy dispute," as required for Official Notice. *MPEP* § 2144.03 A. Applicant respectfully requests that the Examiner provide citation to prior art for this assertion, and withdraw the Official Notice. Certainly, Boegh-Petersen does not support the assertion.

Finally, Applicant has added new claims 30-34 for consideration by the Examiner. No new matter has been added, and all claims are fully supported by the specification. *E.g.*, *Spec.*, pp. 6-11. Claims 30-32 depend directly from claim 28, and further define determining an orientation (i.e., a rotational position) of a component having the machine-detectable frequency-encoding feature. Claim 32 specifically identifies the machine-detectable frequency-encoding feature as an optically detectable feature. Claim 33 depends directly from claim 15 and further recites that the frequency-encoding feature is detected optically. Claim 34 depends directly from claim 29, and further recites that the sensor is a camera.

In light of the foregoing amendments and remarks, all claims are patentable over the cited art. Accordingly, Applicant requests that all claims be allowed.

Respectfully submitted,
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